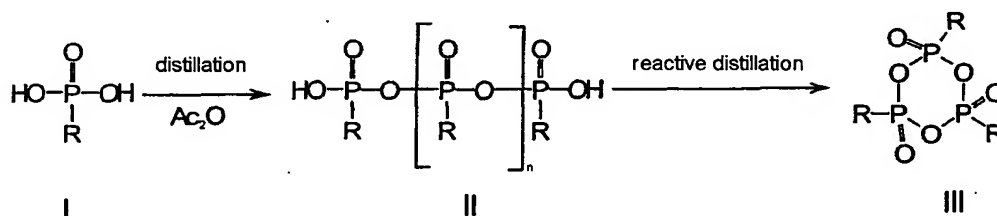


What is claimed is:

1. A process for preparing cyclic phosphonic anhydrides of the formula (III) by
 - 5 a) reaction of phosphonic acid derivatives of the formula (I) with acetic anhydride at a temperature in the range from 30 to 150°C and simultaneous distillative removal of a mixture of acetic acid and acetic anhydride,
 - b) subsequent reactive distillation of the oligomeric phosphonic anhydrides of the formula (II) obtained in step a) and conversion to the
 - 10 corresponding cyclic trimeric phosphonic anhydrides of the formula (III)



- 15 where

n is an integer from 0 to 300 and

R are allyl, aryl or open-chain cyclic or branched C₁ to C₈-alkyl radicals, aryloxy, allyloxy or alkoxy having open-chain cyclic or branched C₁ to C₈-alkyl radicals.
- 20
 2. The process as claimed in claim 1, wherein the cyclic trimeric phosphonic anhydrides formed in step b) are immediately dissolved in an organic solvent which is inert toward them.
 - 25 3. The process as claimed in claim 1 and/or 2, wherein the ratio of acetic anhydride to phosphonic acid of the formula (I) is in the range of 20:1 and 1:1.
 - 30 4. The process as claimed in at least one of claims 1 to 3 the reactive distillation in step b) is effected at a temperature in the range from 100 to 450°C (the internal reactor temperature) and a top temperature of from 100 to 380°C.

5. The process as claimed in at least one of claims 1 to 4, wherein the pressure in
- a) the distillation of acetic acid and unconverted acetic anhydride is between 1 mbar and 1000 mbar, and
- 5 b) in the reactive distillation of the oligomeric phosphonic anhydrides of the formula (II) to give the cyclic phosphonic anhydrides of the formula (III) is within a pressure range between 0.001 mbar and 500 mbar.
6. The process as claimed in at least one of claims 1 to 5, which is
- 10 carried out continuously.
7. The process as claimed in at least one of claims 1 to 6, wherein the resulting cyclic trimeric phosphonic anhydrides of the formula (III), after the reactive distillation, are dissolved in an organic solvent in a mixing ratio of
- 15 solvent to phosphonic anhydride in the range of 10:1 and 1:10.
8. The process as claimed in at least one of claims 1 to 7, wherein the organic solvent is ligroin, sulfolane, DMSO, HMPT, NMP, pentane, hexane, heptane, octane, cyclopentane, cyclohexane, cycloheptane, cyclooctane,
- 20 dichloromethane, chloroform, carbon tetrachloride, 1,2-dichloroethane, 1,1,2,2-tetrachloroethane, methyl acetate, ethyl acetate, propyl acetate, butyl acetate, dimethylformamide, diethylformamide, dimethylacetamide, diethylacetamide, diethyl ether, diisopropyl ether, tert-butyl methyl ether, THF, dioxane, acetonitrile, sulfolane, DMSO, HMPT, NMP or a mixture
- 25 thereof.
9. The use of cyclic phosphonic anhydrides of the formula (III) obtainable by a process as claimed in at least one of claims 1 to 7 for condensation reactions, acylations and the preparation of heterocycles.